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— Estes and Lauriat have published the "Salon of 1889," containing 100 photogravures of prize paintings, prepared by Goupil & Co. of Paris.

— Harper & Brothers publish "The Political Problem," by Albert Stickney, brought out by the discontent that can be observed in Europe and in this country with the practical working of existing forms of democratic government; "Winter in Algeria," written and illustrated by Frederick A. Bridgman; "A Little Journey in the World," a satire upon modern social life in America, by Charles Dudley Warner; "Cradle and Nursery," by Christine Terhune Herrick, advocating the treatment of "the baby" as a reasonable being.

— The publishing committee of the Appalachian Mountain Club announces the appearance, from the press of John Wilson & Son, of a volume with the title "Mountaineering in Colorado: the Peaks about Estes Park," by Frederick H. Chapin, one of the club's most widely known members. The book contains one hundred and sixty-eight pages. The work will be embellished with eleven full-page heliotype plates, besides other illustrations, all from photographs taken by the author upon expeditions described in the text. The work will have an interest for lovers of mountain scenery.

— P. Blakiston, Son, & Co., Philadelphia, make the important announcement of a "Chemical Technology; or, Chemistry in its Application to Arts and Manufactures," to be edited by Charles Edward Groves and William Thorp. Vol. I. is now ready, entitled "Fuel and its Applications," by E. J. Mills and F. J. Rowan, assisted by others, including Mr. F. P. Dewey of the Smithsonian Institute, Washington, D.C. This new edition of "Chemical Technology" is founded on that written by Richardson and Ronalds, and subsequently enlarged and rewritten by Richardson and Watts. As the German technology of Dr. Knapp was taken as the basis of the original, Richardson and Watts's work has long been familiarly known as "Knapp's Technology." The historical portions of the original have been retained, but supplemented by a full account of the methods and appliances introduced of late years in the application of chemistry to the arts. This work will be divided into sections, of which the most important are, "Fuel and its Applications;" "Lighting;" "Acids and Alkalies;" "Glass and Pottery;" "Metallurgy;" "Textile Fabrics;" "Leather, Paper, etc.;" "Coloring Matters and Dyes;" "Oils and Varnishes;" "Brewing and Distilling;" "Sugar, Starch, Flour, etc." The first volume treats of fuel and its applications generally; its special employment in various branches of chemical manufacture being reserved for detailed consideration in the volumes devoted to the special subjects enumerated above.

LETTERS TO THE EDITOR.

A Precocious Botanist.

ACCORDING to the "English Annals of Botany," vol. ii. p. 418, Jean Baptiste Lieury appears to have been unusually precocious, having published a paper in 1874 on *Polyporus*. He was born, it is affirmed, on Dec. 14, 1888: so his researches were perpetrated fourteen years before his birth, which was subsequent to his death, that having occurred on Sept. 3, 1888. For these unusual biographical data, the editors state, they are indebted to M. Eugène Niel of Rouen. Such cases of posthumous rejuvenation are fortunately very rare in this country.

C. S. M.

The Champlain Period in the Susquehanna Valley.

I HAVE lately made some observations on the drift along the river at this point,—Harrisburg,—which I wish to report. This district, being only eighty-five miles from the Terminal Moraine, was consequently much influenced by the post-glacial floods.

The stream is very shallow; and its bed, composed for five or six miles of Hudson slates, is laid bare almost every summer, offering exceptional advantages for observing the overlying drifts. The deposit consists, for the most part, of clay variously intermixed with gravel. At one point I noted a bottom layer of gravel one foot thick, overlaid by twenty feet of fine clay. Scattered through the deposit are boulders of various sizes—the largest be-

ing from six to ten tons in weight—composed of conglomerate and sandstone from the mountains beyond.

The height of the drift varies, of course, with the local topography. From one hundred feet in the mountain-gorges, to thirty feet in the lowlands opposite Harrisburg, is a fair general average.

The width of the deposit is not very great, owing to the narrowness of the valley; still it has furnished ground for most of the towns in the neighborhood, Harrisburg itself being built to a great extent on a level flood-plain thirty feet above the present water-level.

At no place in this locality has the terrace formation been noted. One level flood-plain, of equal height on both sides of the stream, is all that marks the limit of the great post-glacial river.

HARVEY B. BASHORE.

West Fairview, Penn., Nov. 7.

INDUSTRIAL NOTES.

Microscopes and Photographic Supplies.

MR. MORRIS EARLE, of the late firm of Morris Earle & Co., 1016 Chestnut Street, Philadelphia, informs his friends and former customers that he is now a member of the firm of Williams, Brown, & Earle, 33, 35, and 39 South Tenth Street, corner of Chestnut. The new firm has been appointed sole agents in the United States for Messrs. R. & J. Beck of London, the well-known manufacturers of microscopes and "Autograph" photographic lenses. In addition to the manufactures of the latter firm, there will be a complete stock of goods of foreign or domestic manufacture pertaining to the business. Mr. Earle will give his personal attention to the photographic supplies, photographic printing, and microscopical branches of the business.

Sanitary Ventilation.

ONE of the most important sanitary problems of the day is that of the adequate ventilation of our schoolrooms, factories, churches, theatres, and other buildings in which many people are gathered together for any considerable time. Even in the best of modern dwelling-houses the atmosphere is none too good, while in crowded places, such as those mentioned, the air is positively poisonous unless proper means of ventilation are employed. The air exhaled in breathing contains, besides the vapor given off by the lungs, from four to five per cent of carbonic-acid gas, at least a hundred times the normal proportion found in pure air. This gas, though not poisonous in itself, is to some extent a measure of other impurities in the air which are poisonous, and, taking the place of the oxygen, obstructs respiration by preventing that necessary gas from being absorbed by the lungs.

Careful observations and experiments show that the air of a room designed to be occupied for any length of time should not be allowed to become vitiated to an extent indicated by the presence of six or eight parts of carbonic-acid gas in ten thousand. Yet careful analyses made some years ago showed that the average atmosphere in sixty schools in this city and Boston contained, in ten thousand parts, fifteen parts, the air in one of the schools containing thirty-one parts. The mean of the air in the New York theatres had twenty-six parts of carbonic-acid gas in ten thousand, one of them being vitiated to the extent of seventy-six parts.

For healthful ventilation it has been found that different quantities of air are required under different circumstances. One authority gives as the proper quantity of fresh air per hour for each person, in ordinary hospitals, 2,400 cubic feet; epidemic hospitals, 5,000; workshops for ordinary trades, 2,100, for unhealthy trades, 3,600; halls for long meetings, 2,000; schools for youths, 1,000.

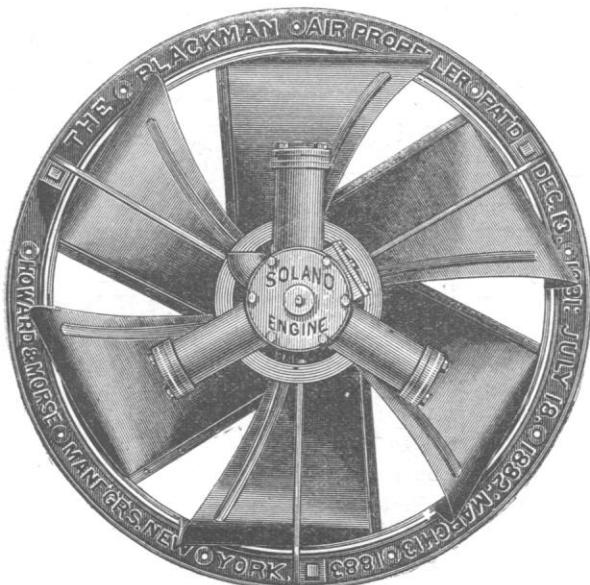
The problem of introducing this large quantity of fresh air into a building has been attacked from various directions, and with varying degrees of success. One method, much in use in this city, is that of positive ventilation, by means of a ventilator-wheel or air-propeller. One of these devices, the Blackman power ventilator-wheel, is now on exhibition at the American Institute Fair in this city, where it attracts much attention from persons interested in sanitary matters as well as from architects and builders. This wheel, and one of the means for actuating it, a high-speed steam-engine, are shown in the accompanying illustrations.

There are certain peculiar features about the Blackman wheel which entitle it to more than passing notice. It is said to be the only exhaust or blast fan made which takes in air at right angles to, as well as parallel with, its shaft, the peripheral flange increasing its supply area by about sixty-six per cent. As the amount of air removed and power required depend upon the area of the feed and delivery surfaces of air-moving machines, this wheel must necessarily give a maximum delivery with a minimum absorption

The fan, of course, may be driven by belt or electric motor, being adapted to any desired motive power.

The Merritt Type-Writer.

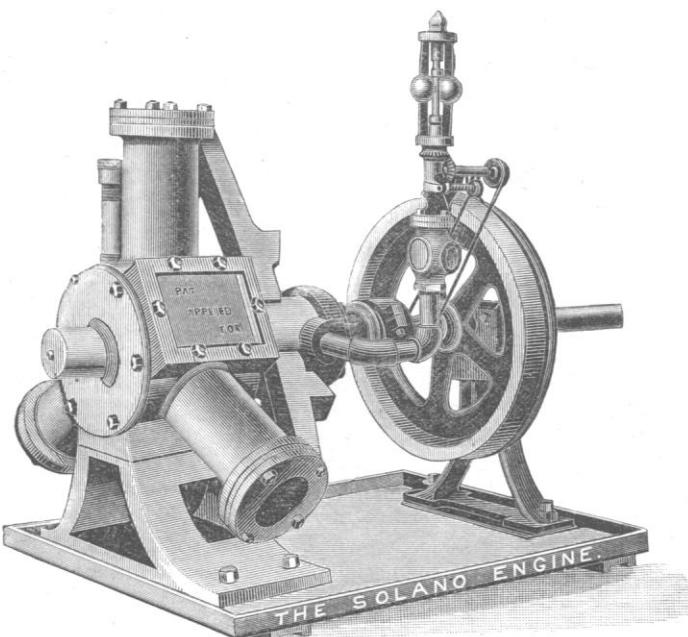
THE little writing-machine shown in the accompanying illustration belongs to the class of type-writers referred to in these columns last week, and known as lever or single-key machines. The paper being placed in position on the rubber roll or platen, and the latter set at the proper point for beginning a sentence, the finger-key or



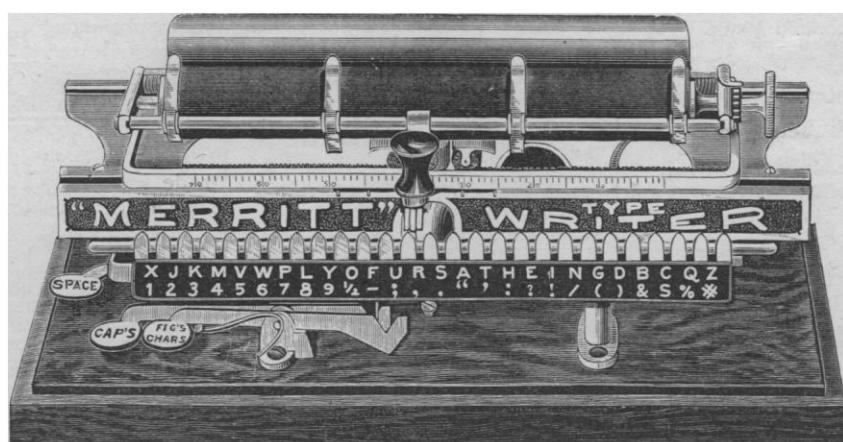
THE BLACKMAN AIR-PROPELLER AND SOLANO HIGH-SPEED STEAM-ENGINE.

of power. The actual air-propelling capacity of the wheel, as given by the manufacturers, is one million cubic feet per hour for each horse-power used. These wheels are giving satisfactory results in public halls, schools, theatres, mines, and other places, where they are used to remove vitiated air or to supply fresh air. They range in diameter from twelve inches to ten feet.

The Solano high-speed engine also possesses some features peculiar to itself. It has no dead centre, and can therefore be



lever is moved to the letter it is desired to print, and pressed down into a notch in the guide-rack. The types, which are the same as ordinary printer's types, are carried in a type-holder attached to and moved by the finger-key, and correspond in relative position with the letters on the index-plate. The movement of the finger-key to any desired letter, therefore, brings the corresponding type to the printing-point; and the depression of the key into the notch both locks the type-holder in position and forces the proper type up



started with the crank in any position; and the working parts are entirely enclosed and protected from dust. The pistons, of which there are three, are light and deep, and guide themselves in the cylinders. The valve motion is very simple, a single rotary valve being steam, exhaust, and relief valve all in one. The lubrication is entirely automatic, and, up to a speed of four hundred revolutions per minute, the only lubricator required is that on the steam-pipe, whence the oil is forced to all the parts needing it. This engine and the wheel or fan described, to the shaft of which it is attached, make a self-contained, compact, and efficient ventilating-machine.

into contact with the paper. Accurate alignment is secured by means of a type-guide.

This machine prints capitals, small letters, punctuation-marks, figures, etc., and its work is as clear and legible as that of the expensive key-board machines. It uses 78 ordinary printing-types, which are inexpensive to replace when worn out. The types are inked automatically, and no ribbon is used. A speed of sixty words a minute is claimed for it; the speed-test, of course, being made by the frequent repetition of a short sentence with short words, as in all type-writer tests of the kind.